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HOME GEOGRAPHY*

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THE study of home geography does not find its chief recommendation in the local information that it provides, but rather in the aid that it furnishes through local examples to the general study of geography, by giving full meaning and reality to geographical facts and relationships the world over. The reason for this is that geography as a whole is hardly more than a compilation of innumerable local or home geographies. However the home geographies of different places may vary, the distant ones can always be better appreciated if the local one is consciously observed and understood as a member of the class to which it belongs.

There are certain important principles that the teacher should bear in mind during the progress of local study. Geography teaches us about the way that people live on the earth—this being a simple conversational definition of this subject, sufficing to embody in elementary form "the study of the earth in relation to man." Geography is therefore concerned with two classes of facts and with the relations in which the two classes stand. The first class embraces all necessary facts about the inorganic earth—land, water, air—and about plants and animals considered as the non-human inhabitants of the earth; the second includes the necessary facts as to the manner of man's living, from the savage to the civilized state, from wandering nomads to fixed populations, from the thieving of warfare to the competition of trade. It is only as the facts that constitute these two classes come to be understood that their relationship can be studied; and this matter of relationship then becomes the very soul of geography. The items of geographical text-books are then not merely so many absolute, empirical statements; they are examples of the relationship established in a certain region between man and his natural environment.

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In more advanced teaching, the pupil should be led to see that plants and animals as well as man respond to their environment. Geography then becomes "the study of the earth in relation to life." All the elements of controlling environment are then to be grouped under physical geography or physiography; and all the examples of organic responses make the other half of geography, which may be called ontography. There are innumerable relations within each of these divisions as well as between them. Thus the winds make the waves and the waves wear the coasts: or sheep eat grass, and man uses sheep's wool for his clothing. But in all cases, geography is concerned rather with the relations into which its facts enter than with the facts, isolated and alone.

Actual examples of geographical facts and relationships are to be seen on every hand. No teacher need be entirely dependent upon a text-book. When geographical facts are taught from text-book alone they are bereft of their natural foundation and fail to develop in a child the interest that should be aroused and that can be aroused if geography is based on personal observation.

A few suggestions follow as to what can be done in this way in an excursion covering a hill and a valley with a brook or river. In such an excursion are included many facts that deserve observational study through a large educational range, from elementary grades to the university. At first, a simple statement of directly observed facts suffices. But very soon, the nature of the facts will be better appreciated if their fuller meaning, their physiographic life is pointed out. Thus a creek comes to be recognized as a stream of water, fed directly or indirectly by rainfall, and bearing the waste of the land towards the sea. The soil on the valley slopes is rock-waste, a result of weathering and not yet washed away. The continuation of the activities that are associated with and may be studied near the brook must produce certain slow changes in the form of the valley; and it is by the long continuation of such activities in the past that the present form of the valley has been produced. With progressive weathering and washing on the two slopes of a hill, it must in time dwindle away; and the same processes acting through the past have carved the hill into its existing form. Thus not only the facts, but the nature and meaning of the facts become clear and vivid.

The features of a coast line may be treated in the same way. A part of the line may be traced and its peculiarities noted; thus the simple facts become clear. But very soon, the coast line should be treated in its true physiographic relations. It is the line where the sea borders on the land; and this line has been determined in the first place by such elevation or de-

pression as the land has last suffered, whereby the waters came to lie upon it at a certain level, thus giving the initial shore line a certain form: second, by the activities of rivers and of the sea waves, tides, currents—which have brought about certain changes whereby the initial shore line has become the actual shore line. The ease or difficulty of understanding the present shore form is partly determined by the nature of the local example studied, but more largely by the knowledge or the lack of it on part of the teacher.

The phenomena of the weather serve admirably to develop the habit of observation, yielding a large return in facts of importance, many of which are susceptible of simple explanations, and thus it is not to the rivers and ocean alone that we must turn for observational study of geographic facts. The geographical portion of the study of animals and plants also presents interesting examples of similar healthful exercises in geography, but the limits of space forbid their consideration at this time.

It will be noticed that in the paragraphs dealing with rivers and coast lines, something of explanation is introduced. This I hold to strongly, as introducing the rational element into geography, and thus invoking the understanding to aid the memory. It is not merely for the sake of knowing how hills and valleys are made that the problem of weathering and washing is discussed; it is discussed because the facts concerning the hills and valleys of to-day, at home and abroad, can be much better appreciated if one understands how the hills and valleys have originated. There can be no question of the truth of this principle; hence I would urge on every teacher the importance of not only leading pupils to observe accessible facts, but of leading them quickly and easily to perceive the meaning of the facts observed. And with this brief consideration of the first class of geographical facts, let us turn to the second.

A village is an admirable subject for observation of human conditions. Notice the increasing closeness of the houses towards the center, around the stores and offices; note the larger open spaces about the border of the village. See how the roads converge towards it from the surrounding country. Consider the traffic on the roads, inward and outward. All of this should be taken, not merely as local fact, but as an example of a way in which some of the people of a certain country in the world live. After direct observation comes simple explanation. The post office is near the center of the village, because it there best serves general convenience. A single road leads out for a mile and then forks into two; because it is cheaper to reach two districts in this way than by two independent roads. Some of the villagers work in shops, others are employed in a bank, or at a railroad station; thus diversity of occupation is first observed, then accounted for. The growth of the vil-

lage may be explained, story-fashion. Then, like the hill, it is seen to have a life-history.

As examples of the two fundamental classes of geographical facts accumulate, bring them into their relation. The site of a village has meaning in it; it is a consequence of some natural features, or group of features. In one case a village lies on an upland so as to be away from the steep-sided, narrow ravines that dissect a plateau; in another a village lies on a valley floor, because the hills are too high and too isolated to serve as convenient centers of population. Certain parts of a coast line are very thinly inhabited; these generally offer poor opportunity of embarking or coming ashore. Between many miles of such a coast a natural harbor may determine the location of a large city. Roads and railroads, fields and forests, farming and manufacturing all respond to geographical environment. From beginning to end, from the simplest and most apparent examples of relationships ready at hand for every teacher, to those most involved examples which the professional geographer is trying to clear up, the relation of man to the earth is a most alluring study.

It is sometimes said that in the schools of large cities, observational study is impossible; but this is a serious mistake. It arises from the failure to perceive that a city belongs in one of the most important sub-classes of geographical facts. Consider, for example, what may be seen on a single street. It is paved and curbed; it is lighted, watered and drained; houses are built closely along it, and they vary in size, construction and use. Remark the activities of the street; the varying stream of people, passing this way and that, crowding the sidewalks at certain hours, deserting them at others. Observe the traffic in wagons, the passengers in cars. Here is fact in abundance. This all exhibits the way in which people live at certain places, called cities, where for some reason many thousands are crowded on a small area. Why are they thus crowded? Why are some cities or villages larger or smaller than others? Is this particular city larger now than it used to be? Why is it engaged in certain kinds of trade? Through these observations and questions, the human element of geographical study is prominently brought forward, as it should be.

It is not only through the principle of likeness that home facts are useful in describing distant facts; the principle of contrast is no less helpful and important. The children of a city school may learn not only about other cities by comparison, but they may learn about smaller gatherings of population, as in villages; they may even expand their parks into a useful understanding of fields and forests by playing variations on dimensions. An excursion over a hill or across a valley may be extended to a great variety

of lessons, about mountains and plains, large rivers and small, fertile regions and deserts. A winter cold snap illustrates the climate of a frigid zone; a summer hot spell exemplifies that of the torrid zone. A drought serves as a sample of an arid climate; a period of heavy rain introduces stories of the excessive rainfall of the equatorial belt.

In this extension of the local to the remote, I would urge teachers not to be too logical. Some hesitate to mention Africa until Africa has been "studied." This is too formal. Surely, no good narrator would, before telling a story to children out of school, ask if they had studied about the continent where the story is located; he might however wisely select for his scene an unstudied region, and thus make way for it. Here, as in certain other cases, the teacher may often in school imitate to advantage the informal methods that prevail out of school.

Thus the attentive cultivation of home geography, taking advantage of the many examples of the two classes of geographical facts that are spread about us, affords a natural, observational, rational basis on which the larger aspects of the study may be securely founded.

HOME GEOGRAPHY

The object of this grade's work should be to relate the conceptions already formed and new ones to be formed during the year, so that they will make a related whole in the form of a specific geographic organization, the city. The process of procedure should be much the same as will be followed later in the study of larger geographical regions. That is: we should begin with that nearest to the pupil in point of interest and at the same time the natural continuity of topics should be observed, building upon the simpler and more casual topics those more complex topics dependent upon products and civic organization. The use of maps is important. No map should be presented to the pupil which he has not already interpreted and constructed for himself. The natural horizontal direction should be used in placing the models and maps, until the child is perfectly familiar with the directions and locations on the plain, and then slowly and carefully the transposition to the usual map directions can be made, by placing them in the vertical position on the north wall and later to other positions. So far as possible a proportional size should be followed in all map construction to give the children a proper conception of relative distances.—*From the Chicago Course of Study.*

GEOGRAPHY OF MANCHURIA

Physical and Strategic.

BY N. M. FENNEMAN

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A COMPARISON of the campaign now being waged by the Japanese, with that carried on ten years ago in the war with China, leaves a very strong impression that the nature and direction of the army movements are being controlled by the surface of the country. The enemy in the former war came from the South; in this war from the North. The former enemy was weak; this one strong. Yet the movements of the opposing armies have been so nearly identical in the two cases that it has well been said that a strategic map of either war would serve to illustrate an account of the other.

Maps. Reliable maps of Manchuria are exceedingly difficult to obtain, if, indeed, they exist at all, outside the circle of the Japanese war department. A search of a number of days for such maps revealed a hopeless confusion and endless contradiction among various authorities. An eminent American strategist has announced his decision to give up as hopeless the location on any map, of places named in the war accounts. This state of affairs gives a pathetic humor to the announcement of the Russian generals after the battle of the Shakhe river, which was to the effect that the battle had been lost for the want of accurate maps which, unfortunately for them, their enemies possessed.

Latitudes and dimensions. Manchuria is a country of large dimensions, nearly 1,000 miles long from the northernmost bend of the Amur river to the Yellow Sea on the South. The average width is nearly 400 miles, giving an area of something less than 400,000 square miles. Accuracy is not possible on account of the contradictory nature of maps with reference to the western boundary. Port Arthur on the Yellow Sea is in the latitude of Washington; Mukden in that of New York; Harbin is as far north as Montreal. This is approximately at the center of the country, so that the northern boundary reaches the latitude of the southern part of Hudson Bay. Vladivostok is in the latitude of Boston, though, to complete the scheme of analogy with American cities, Boston should be some 200 miles farther east.

Climate. These locations at once suggest a large range of climates. In general it may be said that the climate of Manchuria is colder than that which is found in like latitudes in Europe and North America. For the southern part of the area this difference is not great, but in going north the

departure of the mean annual temperature from the average of this latitude is intensified by the unusual cold of the winters. The climate is markedly of the continental type, and therefore subject to great extremes. With summers slightly warmer than the normal for this latitude, the winters, even at Harbin, are some 36 degrees colder than the normal. This gives to the valley of the Sungari river a winter temperature similar to that of southern Greenland. The valley of the Amur, as might be expected, is still colder. In New York and adjacent states the difference between January and July average temperatures is for the most part less than 50 degrees. At Mukden the corresponding difference is 70 degrees, and the difference increases northward to 90 degrees on the Amur river. However, lest it should be supposed that these low winter temperatures indicate a typical Arctic climate, it should be remembered that vegetation depends primarily upon the nature of the growing season and not upon the character of the intervening winters.

The winds of Manchuria, unfortunately, come from the North or Northwest in winter, and from the South or Southeast in summer. In addition to the effect which this has upon extremes of temperature, it exercises a dominant influence upon the distribution of precipitation. The winters are dry; the summer monsoons bring drenching rains. Forty-five days of continuous rain have been known in the valley of the Usuri, an amount sufficient to rot European crops cultivated in European style. It is said, however, that the natives have adapted their agriculture to the peculiar conditions and there is apparently no reason why the broad valleys tributary to the Sungari should not become an agricultural country of great wealth.

Topography. The dominant features of the topography are indicated by the direction of two lofty mountain ranges, the great Kinghan on the northwest, and the Shan-alin or Long White Mountains on the southeast. The latter extends northeast to the Amur and Usuri rivers. At its southwest end, 900 miles away, it dies out in the rugged hills of the Liao-tung peninsula. Probably both of the ranges named are much broader and more complex in their alignment than is indicated upon the very sketchy maps available. On the north side, roughly parallel to the Amur river, but lying south of its broad valley, forming the water-shed between the Amur on the north and the Nonni and Sungari and their tributaries on the south, is a tranverse range with altitudes from 3,000 to 5,000 feet. West of the Liao river is a small range along which the present boundary of southernmost Manchuria is drawn. Between the mountains thus outlined are the broad, comparatively level and seemingly highly fertile valleys of the Nonni in the extreme north, the Sungari and its other tributaries in the center, and the Liao in the south. For long distances within this territory, these valleys lie

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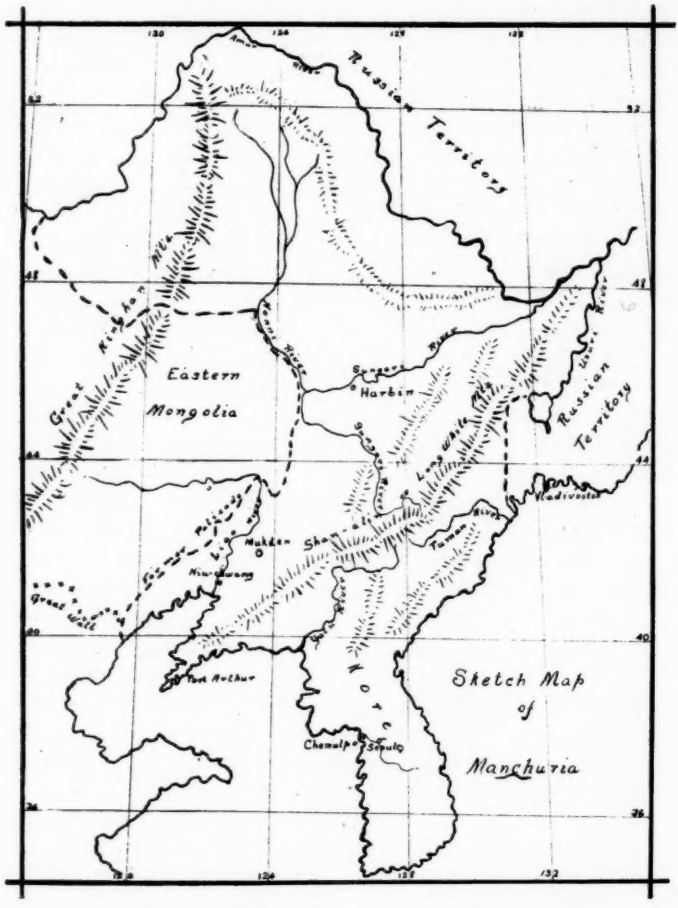
less than 600 feet above sea level. Even the low divide between the Sungari and the Liao is a gently rolling upland of moderate elevation. There is nothing in the nature of the valleys thus outlined to prevent the marching



of an army from the shores of the Yellow Sea to the upper Nonni river, several hundred miles north of Harbin.

Forest and Prairie. The mountains and adjacent hilly country, comprising one-half or probably more than one-half the entire area of the country, are well wooded. The valleys are prairies. It is said, upon the authority

of Prince Kropotkin, that the prairies of the Amur river are covered in the spring with grass and flowers to a height of four or five feet, and there is apparently equally good authority (Reclus) for the statement that the prairies of the Sungari valley are clothed with grass from eight to ten feet deep, though it is not improbable that this statement applies to the best of the prairies rather than to the average.

Population. This northern area, seemingly so fertile, and so full of promise for the future, is almost uninhabited. The country south of Harbin, and especially the valley of the Liao river, is fairly densely populated, the latter supporting perhaps its full quota of human beings. It is said that the population of southern Manchuria, which extends essentially to the divide between the Liao and the Sungari, is about 12,000,000 people, though statements vary widely. For the remaining four-fifths of the country there seem to be less than 8,000,000 inhabitants.

Unsatisfactory boundaries. This country of less than 400,000 square miles has 2,500 miles of frontier against Russian territory. The Amur river, running through a broad and fertile lowland, nominally divides that lowland politically into two parts, Russian on the north and Chinese on the south. To those who are familiar with the history of boundary lines, such a division carries the suggestion of extreme weakness. Modern civilization has found out, as some one has said, that rivers are the diameters of communities, and not their circumferences; that trade, and with it all the rest of modern life, gravitates toward the rivers, and there mingles and thereby unifies the life of the country on both sides. Should the country along the Amur become well peopled and civilized, it would seem as impossible to preserve one sovereignty on the north and another on the south as it was to keep the Rhine river German on the one side and French on the other. Or, again, it would seem that the difficulty of maintaining separate sovereignties on the north and south sides of the Amur would be found no smaller than that of erecting separate sovereignties on the north and south sides of the Ohio and Potomac rivers. Rivers may make very good boundary lines between purely administrative divisions, such as counties within a state, or even, in so strong a central government as the United States, between states, where a man may go down to the river bank and cross without any experience to show that a new political division has been entered. But between independent, sovereign and possibly hostile countries, while temporary barriers in times of war, navigable rivers are fatal to continued separation in times of peace.

The boundary between Manchuria and the Russian possessions on the east is fixed at the Usuri river. All the disadvantages which must some day be

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felt in connection with the Amur boundary on the north must here be duplicated. The Usuri valley is already a highway for Russian trade and armies. On the southeast, Korea is separated from Manchuria by the Tuman river and the Yalu. Transgressions of this boundary afforded the final provocation and immediate occasion for both of Japan's great wars, the one with China, the other with Russia. The causes of these aggressions lay in the natural tendencies of trade. With anything like powerful sovereignties on opposite sides of this boundary line, the Yalu river would make about as good a frontier for Korea as the Po river would for Italy. The natural frontier of Korea is the Shan-alin mountains, just as the Alps are the natural boundary for Italy. On the west, Manchuria is separated from eastern Mongolia by a purely artificial and invisible line, except at the southernmost end, where the line follows the low ridge mentioned above. The entire boundary of southern Manchuria was for several centuries marked by a wooden palisade, but that has totally disappeared except for occasional widely separated ruins.

Natural boundaries. If a civilization is to grow up in Manchuria with reasonable hopes of stability and peace, it will doubtless be found necessary to rectify these boundary lines in some manner so as to separate adjacent sovereignties along natural lines. It will probably always be found impossible to retain much political or commercial unity between central Manchuria and that part lying west of the Great Kinghan mountains. It would probably be a gain to the country rather than a loss if it should be relieved of the care of that remote portion of its territory. Similarly on the north, if the Russian is to occupy the northern bank of the Amur river, he might as well occupy the southern side, having his frontiers along the low mountain range which forms the divide between the Amur on the one side and the Nonni and Sungari on the other. This would leave to Russian domination the well unified and naturally delimited valley of the Amur. To Manchuria it would leave the equally well unified basin of the Sungari, and all its tributaries. Should the Russians retain control, as no doubt they will, of the country east of the Usuri river, it might well be found to the advantage of both countries to correct the boundary line by establishing it along the line of the Long White mountains. On the west, it is highly desirable that any sovereign state which may occupy Manchuria should extend its frontiers to the Great Kinghan mountains.

Coast line. The coast of Manchuria is not very different from the coast of Scotland or that of Maine. It is that of a well dissected country of strong relief, partially submerged. The peninsula of Liao-tung, at the end of which Port Arthur stands, is but the low continuation of the Long White mountains. Such a coast is characteristically rich in harbors. The

Japanese found it easy to effect landings at fifteen or twenty different points in the present war. It is therefore a very easy coast to invade, but for reasons similar to those which have made the good harbors, it is a very difficult coast to subdue or conquer. Port Arthur is a natural basin in a mountainous upland, submerged beneath the waters of the Yellow Sea. The knobs of subdued mountains surround it on its landward side in a way now familiar to all, making a natural fortress of peculiar strength.

Routes of invasion. If the routes followed by the army of invasion be examined, they will be found to have a very close dependence upon the geography here sketched. The initial landing of troops was on the west side of Korea. From this point the comparatively low country was followed to the Yalu river. Considerable resistance was met at this point and a notable battle fought in which it has been said that the Russians occupied the exact heights which were fortified by the Chinese ten years ago, were deceived by the same ruses and went down before the same attacks, coming from the same direction. They then retreated northwestward toward Feng Wang Cheng by the same road followed by the Chinese. At Feng Wang Cheng the road sends out various branches in westerly directions. This place, though a center of travel, was not chosen to be defended, probably because of better opportunities at the passes to the west and northwest. It is here, along the southwestward extension of the Long White mountains leading down to the peninsula of Liao-tung, that a long delay occurred. It was at first reported that the passes of the mountains to the west and northwest were unfortified, and it was supposed that the Japanese were marching without opposition toward Mukden on the north and Hai-tcheng and Niuchwang on the west. Here, however, the natural strategic features of the country came into prominence by a long delay occupied with repeated skirmishes and stubborn fights between comparatively small armies. Despite the earliest reports which gave to the Japanese an unimpeded passage over the low range, it was four long months before the passage was effectually made, and Motien and Daling passes have repeated mention as the scenes of hard fighting until after the battles of Liao Yang and the Shakhe river. This low mountain range safely passed, the complete occupation of the open valley reaching south and north from Mukden was largely a matter of fighting strength, and it would seem to a layman, of geographic rather than strategic interests, that the steady progress of the Japanese northward to Harbin, or of the Russians southward to near Port Arthur, is a matter of hard and skillful fighting rather than of strategic questions based on topography.

OBSERVATIONAL WORK FOR CHILDREN*

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IN this country observational work for children is a matter of theory rather than practice. However much teachers who are particularly interested in geography may be gratified with the "new geography," they can but lament the lagging of this very important side of the subject. And its importance does not end with the study with which it is connected; it touches much of the whole primary programme, besides being an asset in the grammar and high school work of the student. When teachers and school directors appreciate this fact, observational work will be insisted upon, whereas its practice is now largely a matter of sufferance.

The advantages to children of this method of study must be real and obvious if school superintendents are to indorse it; the men who are responsible for the efficiency of our elementary and grammar school work have delicate adjustments to make in their present crowded schedules. The simple school programme of our fathers has been variegated and expanded quite to its maximum. Nevertheless the problem of the present in the elementary grades is one of correlation not retrenchment; little sacrifice should be made in variety of training, but careful attention should be given to the matter of useless duplication of work, and to dissipating the energy of pupils. Whatever means give promise of minimizing these two conditions should be well considered, if not empirically investigated.

But before we can see observational work in operation in many school systems of even moderate size, we must have a changed attitude in either one or both of two educational exponents, the grade teachers and the superintendents of these systems. When enough of the teachers in a system of schools become convinced that this side of geography work is worth while, without doubt their wishes will be respected by their superintendents; or when the superintendent is satisfied with the wisdom of thus investing time and energy his teachers will be pleased to coöperate. It is certain however, that while superintendents in general indorse the observational phase of geography teaching, they demur on the ground that they can not find a place for it, or that their teachers do not succeed with groups of children out of the class room; other reasons have been stated to the writer, but these two are most frequently given. The first objection disappears with the conviction that the work gives educational returns; the second is a premature conclusion due to conditions which we will consider in another connection.

*Read before the Educational Section of the Eighth International Geographic Congress.

Another objection less commonly urged, but much more pertinent, is the teachers' lack of training for carrying on observational work with their classes; and few superintendents have been able to give the subject very special attention. Preparation for the work on the part of the teacher is to be desired; with the wide-awake teacher this lack of preparation is not a formidable objection. The numerous, and still increasing number of summer schools ought to give an opportunity for the hesitating teacher to acquire the confidence needed. Indeed a great deal might be done by our State departments through the Institutes, city and county.

Nevertheless the hesitation which teachers have in reference to taking up observational work with their classes is for the present an important consideration. This hesitation is due in part, as just stated, to a lack of special training; to timidity in managing children in the field; and also to want of time. The removal of the first cause rests with the teacher; suggestions for this work may be found in books, in current educational literature, and in published courses of study; an investigation of the home locality, physical features, manufacturing and commercial interests, will show the extent to which these suggestions may be applied, and may also reveal many possibilities entirely local. The second cause comes either from expecting too much of children, or from too brief an experience with them in the open; it must be remembered that the novelty of the situation has an exuberant effect on the youngsters the first time or two in the field; anyhow it would be exceedingly depressing to find pupils taking out into the sunlight and exhilarating atmosphere their in-door decorum; as teachers perhaps we should if necessary cultivate an adaptability to juvenile out-door feelings. More serious in its bearing on the problem is the lack of time; every lesson in observational work should be prepared thoroughly; for the novice this means much extra effort the first year at least; furthermore if the trips are taken the last period of the afternoon session, as may be done for the nearby excursions with least inconvenience to the programme, that half-day's work may be lengthened some; no enthusiastic teacher will find it very discommoding to give this additional time to the progress of her classes.

This increased tax on the teacher, however, has its compensation. She becomes more efficient even in the estimation of children who appreciate freshness of information, freedom from books; this feeling of pupils in the primary grades is akin to that of high school or college students for instructors who are also investigators. On the other hand of far greater importance is the teacher's growth in intrinsic efficiency. As teachers we learn much from books, lectures, etc.; but this learning does not insure teaching success, it may make possible a dangerous kind of mental stagnation. The

teacher who, year after year is an inspiration to pupils, keeps in touch with more than text-books; one source of such inspiration is the field study necessitated by observational work.

SOME DETAILS CONCERNING OBSERVATIONAL WORK

For obvious reasons the number of pupils usually allotted to each teacher in the grades is more unwieldy, from the standpoint of good work, out of doors than in-doors. Under ordinary circumstances twenty pupils should be the maximum number for observational work. Best results, therefore, follow making each trip in two sections, the substitute or practice teacher taking charge of the section left at their desks. No other part of the work, preparation or discussion, needs to be thus duplicated. If proper ideas prevailed among the supporters of our public schools this repetition would not be required; a teacher should never have more than twenty pupils. Under our present system the Batavia method of having two teachers for each room loans itself easily to this division for out-door work.

To be most effective observational work must be a regular part of the programme. All teachers who have tried out-door exercises understand that for the first time or two the children do not get entirely away from the picnic or frolic idea. Again, the repeated appearance on our streets or in the parks of a teacher and her group of pupils will shortly educate the general public out of its present glaring wonderment; we lament that in the minds of so large a portion of the American public, education means the elimination of first-hand knowledge. A regular time at stated intervals for the observational work will place it in the child's mind on a par with his other school duties. One or two trips in a season have little more value as an aid in geography than has any other outing.

All out-door exercises should be preceded by a class-room consideration of the chief features of the trip. If a factory is to be visited, ascertain in this discussion what any of the children know of the raw materials used, of the methods employed, of the products, etc. This particular factory may mean food and clothing to some of the pupils; their parents may be operators, or otherwise connected with the plant. Suppose you plan a field study of soil, or that you are to visit a garden, a nursery, or a farm; pupils in even the lowest grades can contribute some information to a preparatory discussion of these topics. It is a trite expression that we never know a subject till we teach it; in a similar manner the child is made stronger by imparting information to his class room companions. An anticipatory interest should figure in all observational work.

Children on these field trips should be directed in reference to points

intended for their note books; it has sometimes been thought best to have the notes taken by every third or fourth pupil, all using these notes later in the class room. In the advanced primary and in the grammar grades each child should make field notes. In general pupils from the elementary schools are more spontaneous in their questions than are high school or even more advanced students. Possibly this fact is true of children because they have not reached the point of self-consciousness that dreads putting a question which may reveal even excusable ignorance. This inquiring spirit necessitates the wisdom of the teacher's suggesting the particular topics she would have the class enter in their record of the trip.

Having made the trip, then should follow at the next geography period a further discussion, broader and more thorough than the preparatory consideration; in this the children themselves should take the major part; to the former the teacher contributed much. This summing up of the trip should be followed by a written report; the composing of this report is language work, differing possibly from the regular language work in having more spontaneity. A record of the trip should be made by each pupil, the disconnected sentences of the lower grades having as much educational value as the more pretentious compositions of the older children.

GENERAL SUGGESTIONS

If a scheme of observational study has yet been worked out and tried, the writer does not know the fact; in several places work has been undertaken with one or more grades; but the real test of this as of any other educational effort is its graduated application to a complete course of primary study. Evidently such a scheme would be a matter of particular rather than general development. The size of the city or village, the economic and agricultural environment, the transportation facilities, the physiographic surroundings, the length of the open or field season, are factors that must figure in the order and nature of the work undertaken.

Nevertheless there are in almost every locality some basal phenomena which may be considered: where men are congregated, stores or markets exist; each region has its own products which seldom have a range equal to the necessities and luxuries used, therefore these stores and markets illustrate the products of other regions; weathering is universal, consequently the genesis of soils is a general topic; wherever there is rainfall the action of running water may be observed; rare indeed are the places from which some products, food or manufactured or raw material, are not distributed, the shipping station thus bringing the child in touch with the necessities or luxuries of his more distant fellows; a building in process of construction

centralizes materials otherwise disconnected, and brings them together too in a lesson that makes instant appeal to the child; even in the humid climate which characterizes the sections of our country most thickly populated there are occasional seasons of drought when we may observe the early stages of a region becoming arid, the grasses first succumbing to the want of moisture, the higher plant forms following.

While concrete illustrations and lessons must always be characteristic of observational work, it should not be approached with the idea that the particular investigation carried on with children is an end in itself; this work has in common with every study connected with nature, or with the interaction of man and nature, an inspiring culture value. The information which children get out of the work is not of chief importance; the discernment it gives them in the relation of controlling influences is of greater value.

And yet we question whether observational work as thus outlined would deserve a place in the primary programme if it concerned geography alone; such work requires time in itself, time in supervision, time in preparation on the part of the teacher. The outlay does not warrant the investment if a single study, geography, is to receive the income. The fact that it is a profit-sharing scheme will be the reason for observational work eventually having a fixed place in school curricula. History, language work, arithmetic, drawing, and the pre-high-school observational sciences, all may be enlivened through this out-door geography study.

The correlation of the activities of men makes history; the trend given these activities by the earth is the more essential side of geography. Naturally then there is great variance between localities in their richness in the joint field illustrations of these two studies. We may feel that our city or town was founded so recently that it has little local history. But let the class visit the oldest building; among other queries occasioned by this place of historic interest arises the reason for its location; the explanation may or may not account also for the town's location. The child should early understand that centers of population are not of accidental distribution. Again, a trip to a flour mill affords the right opportunity for fixing the history of the shifting of the milling industry in this country. Some facts connected with the history of railroads will be more to the point after the children have inspected a freight house, noting what is being shipped and received, the cars of various companies, etc. If your region is one rich in historic associations, so much the better; strategic points in colonization or in war are seldom divorced from geographic causes.

We have already referred to the correlation of this observational work

and language study. Children, no less than their elders, experience a minimum of inconvenience in reproducing what they know at first-hand; it is the attempt to rehash that inspires the feeling of repressive vacuity.

The alert teacher will be pleased with the number of live problems and computations these excursions suggest for the arithmetic period. The zest with which children handle this number work prompts many reflections in regard to the years pupils are made to study text-book arithmetic.

Sketching should be a part of the note-taking in much of the field work; sometimes this drawing in the field should be done with care, as carefully as out-door working will permit; frequently, however, a rough field sketch with indicated measurements, etc., may be reduced to greater accuracy during the regular period for drawing.

It is needless to comment on the best place for studying plants, birds, insects, animals. A field trip with children given entirely to geography is like a train trip on which the passenger sees only the interior architecture of the car. One of the objections to this work with juveniles, it has been urged to the writer, is that children see too much; this gratifying condition invites manipulation rather than suppression; it is always easier to direct a situation than to create it. This phase of geography teaching is therefore common ground for most of the primary programme; its correlation possibilities are obvious; its practice is invariably indorsed by the children, who often are wiser than we allow them to be.

SUMMARY

1. In general the superintendents and teachers of to-day do not fully appreciate the value of observational work.
2. Reasons for the teachers' attitude:
   a. Lack of preparation, a condition which the ambitious teacher can remove.
   b. Dread of conducting parties of children, a feeling which will be removed by practice.
   c. Lack of time, a fact which may be propitiated by further sacrifice, with assured returns.
3. To be most effective, this work should have a fixed place in school curricula.
4. Details:
   a. Class-room consideration of the essential features of each trip should precede the trip.
   b. Teacher should make suggestions of the points intended for note-books.
   c. Further class-room discussion should precede a preparation of the written report.
5. While local conditions will tend to shape the field work undertaken, nevertheless some trips are common to almost every region.
6. Observational work is seldom an end in itself.
7. This work apparently has in it many possibilities in the correlation of studies.

FIELD WORK IN THE ELEMENTARY SCHOOL *

BY ZONIA BABER

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IT is a recognized law that an organism develops through satisfying its needs and that it assimilates only that which it requires for its growth. If, however, the proper stimulus is lacking, or reaction to the stimulus is inhibited, growth ceases and the organism becomes atrophied.

Since this law holds good in the realm of intellect as well as in that of the physical being, the knowledge of the reaction of the child's activities to natural and social stimuli would form the most valuable contribution to human acquirement, since it would enable education to take its place in a parliament with physics, chemistry and the other natural sciences.

However humiliating to the teaching force the fact may be, the statement remains undisputed, that the science of education, which is the greatest of all sciences since it deals with the human soul, has lagged far behind the others in its development.

A few principles relating to the scientific process in education have been discovered and formulated but they have not been the controlling factors in the warp and woof of the educational fabric. With the principle ringing in our ears—Mental activity is dependent upon self experience, we proceed to make schools which successfully inhibit the child's gaining new experiences, confining him to the experiences of others; after years of study of texts his enthusiasm for learning may frequently be represented by an inverse ratio to his scholastic experience.

When we contemplate the task the school formerly set itself, that of perpetuating book lore, we are not surprised when we read the sign, written in invisible letters, upon the façade of almost every school house, "A Refined Cramming Industry, Limited."

Knowledge has accumulated with such prodigious rapidity that the school now cries out in despair, "The task is Herculean, it is impossible!" Even if it were possible to stretch the elastic memory until it could retain all known facts the result would be deplorable. Although one may be able to repeat volumes of the world's richest knowledge, it has no meaning to the individual unless assimilated by self-experience. Character is not made by repeating what the wise and good have said, but by one's doing something wise and good on one's own account. After a few years of the cramming process the student becomes a slave to second-hand experiences. He is helpless when confronted by a new situation without the sustaining

* Read before Educational Section of Eighth International Geographic Congress.

crutch of the text-book. The individual loses the power of initiative, independence, vigor and integrity of mental action. We are beginning to discover that we have made knowledge the end instead of the means of reaching our goal. To give the individual control of all of his powers, to bring him to a realization of his highest possibilities, should be the aim of the school, not the acquisition of facts. This can not be accomplished by the use of text-books alone.

Before our population was so largely urbanized, the child gained possession of his powers by first hand contact with nature and by participation in the industrial activities of the home. Now the school must assume the responsibility of the industrial training once given in the home. To this end our schools are slowly introducing cooking, sewing, weaving, work in wood, clay and metal, gardening and field work.

Contact with material furnished by nature engenders a certain mental activity which the mere observation of conditions fails to satisfy. This need we term a problem, and it is to the mind what appetite is to the body; it determines the food necessary for growth; it focuses the energy toward a definite end; it directs attention and observation for the collection of data, from nature, books, people and cultural products; it calls the imagination into play in forming hypotheses and, if properly utilized, tests the hypotheses by experiment, selecting relevant material, discarding the irrelevant until a conclusion is reached which bears the test of reason.

In organized mental activity the individual finds the highest pleasure. The student who is given opportunity for the exercise of all his powers from his entrance into school needs no price, per cent., nor degrees to stimulate him to action. The reward is in the joy of the doing.

It is only through the solution of the student's own problem that he gains true intellectual development. The power of imagination, reason, observation, memory, can not be developed except by the presentation of conditions which stimulate mental activity in connection with the mind's own normal movement. It is true that the mind may be trained to tricks of memory or observation, but it has been shown that this acrobatic mental skill does not go over into the intellectual power of the individual.

Field work offers an opportunity for such individual development. Every region is rich in problems for the student from the kindergarten age to the adult. Even the six year old has a problem when he makes an excursion to the farm to see how the farmer overcomes difficulties in tilling his crops and tending his stock. In his own little garden the seeds may be planted by hand, tilled with a hoe; but the farmer must devise other methods for his larger work.

XUM

Excursion to the sea shore or lake shore, to a river, to sand dunes, to a mountain, volcano, swamp, to regions where glacial phenomena are illustrated, to caves, quarries or mines, will furnish physiographic problems for pupils above the fifth grade and bring the younger children in first hand contact with natural objects in their normal setting.

Few localities can boast of all these geographic examples, but many may be found within a radius of from fifteen to thirty miles from any school.

Many of the world's important industrial activities, such as farming, lumbering, grazing, fishing, mining, manufacturing, quarrying, building, trading, and others, may be seen within the same radius.

Through visits to the accessible industries the student gains an appreciation of the cultural products of the earth. Greater returns may be expected from a single visit to a certain industry if the students are engaged in the same activity at school or at home.

It is rare that a physiographic area is so simple that one visit may exhaust its possibilities. When changes are taking place with a noticeable rapidity, as at the seashore, in the river valley, or at the sand dunes, visits from year to year give the dynamic conception of the mobile crust of the earth.

Young children form definite images through many contacts with the same material, and they retain definite images but a comparatively short time. Hence they require many and frequent excursions.

Children younger than ten or eleven years of age are interested principally in collecting material—in the activity itself, rather than in causal relations, although the important aspect of cause is not excluded from their wide range of investigation of the wonders with which they find themselves surrounded. Interest in the relations of things can rarely be sustained for sufficient time to test an hypothesis. But after about the eleventh year the causal relation makes a stronger appeal to them and about the age of thirteen or fourteen the student shows much interest in pure abstract thinking.

Interest in physiographic processes may be manifest in a certain degree as a result of field work in any of the grades of the elementary school, yet it is in no sense a dominant factor until the upper grades are reached. Here interest in the problem will carry the student through a series of experiments with running water, waves, air currents, and other forces, testing his hypothesis to ascertain the cause of observed phenomena and will also lead him to search books for farther data which may contribute to the solution.

The benefit of the excursion is not exclusively intellectual. It is useless perhaps to mention the physical advantage of exercise in open air since this

is self-evident. But the social relation of teacher and pupil and of the pupils with each other is so normal and natural, free from the artificial conditions which per force of circumstances must obtain in even the most natural schools, that the teacher has an opportunity to reach the real child too often screened in the school room.

Admitting the desirability and necessity of changing the center of gravity of our school system from the slavish study of the text-book to a study of the environment, with all its activities, which requires for its understanding knowledge of other times and distant climes, the task at present is a difficult one. In the first place the change of standpoint is so recent that teachers, themselves reared for the most part on the text-book plan, are illy prepared for any other work. Where there is an attempt to carry out a new ideal, the community, always conservative, wishing to cling to traditions, frequently puts obstructions in the path of the aspiring teacher. This difficulty may be removed by educating the community through the children and through parents' meetings. The *expense* which is necessarily attendant upon field work is also a matter of grave consideration in most regions. We spend money readily upon the things for which we have a habit of spending, but hesitate when a new expense is incurred. When field work becomes customary either the parents or the school trustees will defray the expense, just as they do for every other feature of our school system which is considered essential.

Another difficulty results from the large numbers of children for which each teacher must under present conditions be responsible. The physical care of fifty children on an excursion is no small responsibility. An extra teacher is a necessity in each school building to aid the regular teacher on her excursions or to attend to half the students during her absence. With care accidents are rare. In sixteen years' experience in the field with many hundreds of children I have never known of a single accident during an excursion. Large classes are not desirable in field work, nor in the class room, yet they are not prohibitive. The individual must suffer in collective treatment in the field as well as in the school room. But the field with its numerous aspects gives opportunity for satisfying interests of each individual which the school room frequently denies. The interest manifested by a class in the discussion of a field trip leaves little doubt of the superior vitality of knowledge gained from self-experience compared with second-handed information.

The organization of the elementary school in this country is far more favorable to making field excursions an integral part of its work than is that of the high school. The departmental teaching in the secondary school makes it

next to impossible with the attitude of the teachers of the special subjects to have excursions except after school hours or on Saturdays. This puts the field work at a disadvantage, but in the elementary school the teacher is mistress of the situation. Although Pestalozzi introduced field work into his geography teaching at Yverdon, Switzerland, a hundred years ago, the schools of this country have been slow in realizing its value—in recognizing that it is fundamental to all true geography teaching.

DISTRIBUTION OF THE CINCHONA TREE

Mr. J. Dronke, in his monograph on the transplanting of this plant from its native home in South America to Asia, gives some interesting facts concerning its present distribution. The habitat of the cinchona is between 10° North and 22° South latitude in the Andes and among the coastal mountains of Venezuela and Colombia. The upper limits of its range are, according to the species of the tree, from 800 to 3,000 metres. The first attempt to transplant it was in 1850, when it was taken to Algeria, with poor success. In 1854, Mr. Hasskarl, for the Dutch government, introduced young trees and seeds into Western Java. It was found to thrive finely in well-watered regions between 1,500 and 1,700 metres above the sea, and with an average temperature of about 17° (62° Fahr.). When it was discovered that *Cinchona Calisayæ var. Ledgeriana* supplied the most valuable medicinal product the cultivation was confined to this species.

The cinchona industry rapidly developed in Java, and that island now far surpasses all other lands in the quantity of quinine produced. Eighty per cent. of the world's product comes from Java, and the plantations cover 20,000 acres. The tree was introduced into Southern India in 1861; but though it thrives there it has in recent years been neglected, on account of the decreased price of cinchona bark, so that in 1899 the plantations covered only about 5,000 acres. It was taken into Northern India along the southern slopes of the Himalayas, and in Sikkim, but its cultivation there has not been important. The production of cinchona bark in Ceylon steadily grew for twenty years after its introduction in 1861. In 1881 the island was one of the greatest sources of supply. In the following ten years, however, the production greatly declined, and fell from over 15,000,000 to 510,462 pounds. Other attempts to introduce the plant into Asia, Africa and Australia have not met with success.—*Bull. Am. Geog. Soc.*, November, 1904.

PHYSIOGRAPHY IN THE UNIVERSITY*

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PHYSIOGRAPHY in this paper means morphology of the land. This is confessedly a narrow limitation of the subject, but within the time and space allowed I shall be able to discuss only this phase of the general subject.

The discussion will relate chiefly to undergraduate work in the University and to work also that may be elected by the average freshman.

Under existing conditions freshmen enter the University with very little special training for physiographic work. Some of them may have taken courses in physical geography in the High School, but in many cases they receive very little training for further work in physiography as a science. Even when the New Physical Geography is taught and where the latest textbooks are used, the work is too often theoretical rather than scientific, developing a tendency toward attempted explanation of phenomena by deductive rather than by inductive means.

Physiography, or the study of land form is a natural history subject—one of the members of a large group of subjects closely related in character. In order to attain the best results from the study of any one of them, it should be studied by the methods that have been shown to be best adapted to the members of the group as a whole. Physiography, as the youngest member of the group and the latest to claim recognition as a subject of educational and disciplinary value, should look to its older sisters for suggestions.

The study of land form is as wholly a matter of observation as is that of a grasshopper, crawfish or frog. In each, the facts of form and structure, the relation of parts, and progressive change are the things that are subject to observation. In each, the results of study are the same:—well developed habits of observation, training in the grouping and comparing of facts, and the drawing of conclusions based wholly on the facts.

The objects sought and the methods of attaining them are of the same kind in physiography as in biology. Animals are studied in the laboratory, especially by freshmen with the object of determining the facts, not to illustrate a theory. Land form also should be studied at first merely as fact. Its details must be seen, recorded, grouped and compared just as facts are treated in the biological laboratory. In the study of an animal in the laboratory, however, merely looking at the animal is not considered sufficient. Mere sense of sight must be enforced by drawings, the proper execution of

*Read before the Educational Section of the Eighth International Geographic Congress.

which will demand the closest scrutiny of the eyes as well as of the mind. The object is pictured as a whole as well as dissected, and then pictured in parts. It is only by such picturing on paper that clear picturing on the mind is effected.

Land form, to be consciously studied, must be treated in as nearly the same way as the nature of the case will allow. Mere observation or, rather mere seeing, is less effective in this study than in biology because of the size of the object of study. No land surface can be studied on the ground, by an unskilled physiographer, in such a way as to arrive at any definite conclusion as to its essential features and their relation to each other excepting through the medium of drawings. In other words a land area, in order to be studied thoroughly, must be mapped. Class excursions for University students in which careful mapping of the area traversed is not rigidly required have relatively little physiographic value. Even if the excursion is followed by a written report by the student, the result is slight because of lack of any necessary connection between close and accurate observation and a general written description. For public school pupils the excursion is valuable because the teacher is able to illustrate by this means geographic terminology, but the University student has long since passed that stage and must see the *relations* of facts as well as the isolated facts.

Accuracy and minuteness of observation are attained only when the facts are recorded. In physiography, facts are best recorded in a map. It is only after facts have been fully and consciously seen that they can be recorded in a map. Without the mapping, observation will be less sharp. The ability to see land form clearly is attained only through some training in map making. Observing and recording, therefore, have a reciprocal relation.

The study of one land surface, however, such as may lie within the reach of any University town cannot fulfill the requirements of a well balanced and complete course of study in physiography any more than can the study of a crawfish fulfill the requirements of a course of study in biology. A crawfish represents only one of the groups of animal forms. Any one land area of such size that it may be reached and studied as a part of the work of a university course of study will rarely represent more than one group of land forms. The study of one area on the ground, however, will furnish a foundation of fact and experience for the study of other forms by means of maps in the laboratory.

The study of additional and different land forms in the laboratory, cannot run parallel to the study of additional animal forms. The latter may be brought into the laboratory and studied in the same way as the first type.

No change in methods of study is necessary. Land forms cannot be brought into the laboratory. A great number of different forms cannot be studied on the ground because of the practical impossibility of reaching them, neither can they be transported to the laboratory.

The only practicable thing to do is to study an image, and since it must be brought into the laboratory it must necessarily be a reduced image. There is, however, an additional reason for studying a reduced image. Even the study of a land area on the ground without the use of a reduced image for continual reference, fails to attain the best results, because of the impossibility of seeing any considerable area at one time. General views which are as important as detailed examination cannot be obtained on the ground because of the size of the object being studied. The ability to see all the parts of a considerable land area in their true proportions and relations from studies of the individual parts without the aid of maps is attained only by the skilled physiographer. The average freshman does not possess it at all, or to a very limited degree.

The size of the object of physiographic study makes it necessary to study it through the medium of a reduced image either partly or wholly.

The biologist encounters a difficulty of just the opposite character. He must study enlarged images of some of the objects which he studies.

The most perfect image is a model, or in a less degree, a relief map, but it is impossible at the present time to study any large part of the earth's surface by such means simply because they cannot be obtained. Only a few small areas scattered over the earth's surface have been even imperfectly reproduced in this way. For the study of the morphology of the lands of the globe, they are of practically no value. They may, however, be used to illustrate lectures on physiographic principles or the theories of land-form development.

For the study of more than a small number of isolated areas recourse must be had to large-scale topographic maps. Of these there is an abundance as every teacher of physiography knows. Practically the whole of Western Europe and considerable parts of North America are represented by such maps. They are and will continue to be for a long time to come, the chief reliance of the teacher of physiography. From such maps the student and teacher must get their foundation of facts. The getting and classifying of the facts constitute a large part of the work of the undergraduate student in physiography. Before land forms can be interpreted and before geographic processes can be fully understood and realized as actual things a considerable body of fact must be accumulated. Out of these the theory of land-form development must be built up. Even if the

student divorces his facts from his theory entirely at first, which is not what is meant here, the later discussion of the theory will be more intelligible because of the ability to test it with the facts. The scientific study of an object consists in the determination, first, of the facts. For the proper interpretation of process and development a greater body of fact is necessary in physiography than in biology. In the latter, process may be studied by observing what is happening from hour to hour or from day to day. In physiography, processes act too slowly for such methods so they must be got at by the comparison and correlation of facts.

We must, however, in University work go beyond mere fact to its interpretation. Land form must be seen as the product of forces acting through time on certain more or less fixed conditions in the earth's crust. That phase of the earth's crust of most importance in land morphology is its structure or anatomy. The relations of anatomy and morphology in the earth are as close as in an organic being. In this is in other phases of earth study we are either limited to a small area or else forced to obtain our facts from maps. From these, in the form of geological maps, there is abundant opportunity to obtain the main facts of earth anatomy over large areas. A large collection of geological maps is as essential a part of the equipment of a physiographic laboratory, as is that of topographic maps.

In the study of such a map for physiographic purposes, no previous knowledge of geology need be required of the student who is beginning his physiographic work. In fact, a certain amount of training in descriptive geometry is of more value than training in laboratory paleontology or mineralogy. The student may not even know the names of the common rocks, though in the great majority of cases he will know at least that much. The student of average ability will learn to read geological maps in a few days. He must have the table of geological formations at his fingers' ends, and know the relative position and age of each.

If the map, either topographic or geologic, be published in sections covering small areas, the sections must be mounted in the form of wall maps as large as can be conveniently handled. The larger the better because of the better general view obtainable from such maps. The broad relations of the various parts can be seen no better when represented on separate sections of a map than when seen by bits on the ground. In many cases the broad relations of land forms are of more importance than minute details.

Next in importance to a large collection of large-scale topographic and geological maps is a large collection of selected photographs. Mere pictures excepting in public school work have very little if any value when

used merely as such. When well-selected and properly used they occupy a place that cannot be filled from any other source.

Models, maps and photographs constitute the laboratory equipment for good laboratory work in land morphology, during the undergraduate life of the student.

There are two ways to use this equipment in teaching land morphology, depending upon the point of view taken by the professor. It may be used to illustrate a series of lectures on the theory of land-form development, or it may be used, under the direction of the teacher as a means by which the student may be taught to draw his own conclusions on such development, by the study of the facts of form shown on the maps. In the first case the laboratory is merely an accessory to the lecture-room and the material of the laboratory is merely illustrative material and used incidentally. In the latter case the relations of lecture room and laboratory are reversed. The laboratory is the place where the work is done. It is the place in which facts are collected and manufactured into finished products—where all hypotheses are put to the test of facts.

The latter is the more scientific. It is the method followed in the other natural history sciences—one that has demonstrated its value as a means of educational discipline during the last half century.

A serious difficulty in the study of physiography by the laboratory method at the present time is the lack of a laboratory manual or guide for the student. The biologist has a great number of guides to select from. The lack of this essential in physiography is due partly to the newness of the subject in the University Curriculum and partly to a lack of any tradition as to what should be included in the subject. There is no general agreement among physiographers as to what the term means or what University work in the subject should include; nor as to the method to be pursued in lecture-room or laboratory. Until this condition becomes established the teaching of the subject will be difficult.

Although no manual can be purchased yet, the student in freshman and sophomore work at least, and preferably in junior work, must have one. It must be supplied by the teacher. The best manual is not one that discusses the land forms being studied but one that consists merely of a series of questions or suggestions so drawn that they can be answered only by close and careful, almost microscopic, study of the material. They must be so drawn also that the significant and essential features of the region are brought out clearly. The questions or suggestions must be direct and to the point. General suggestions will not answer the purpose. The student should be required to get his facts from the laboratory material, not from such descrip-

tive literature as may exist for the area concerned. An experience of several years has convinced me that undergraduate students will not as a rule obtain satisfactory results by putting the material before them with general directions for work. The photographs should be studied as closely as the maps. Each photograph should be numbered and the point from which the view was taken as well as the direction and range of view located exactly on the large-scale topographic map. The map and photograph should then be studied together, every significant object in the view located on the map and vice-versa—so that the correlation of the two is complete. This can be accomplished only by a set of questions drawn for each photograph. Probably a better mental conception of the significant facts of form in an area well covered by good geological and topographic maps, and by properly selected photographs, can be obtained by the study of such material, than could be obtained by the student on the ground even with the use of the maps, but without the photographs.

The average student, however, looks upon a photograph merely as a picture, unless his attention is specifically directed to what it shows. Merely looking at photographs is not laboratory study.

Geographic or physiographic literature is concerned to a great extent with the development of land form or with the explanation of the facts presented in particular areas. It cannot in the nature of the case give as clear a conception of the facts as can be obtained by study either on the ground or of a good map. Before explanation of facts can become intelligible, the facts themselves must be observed. Only after a certain body of fact has been worked out for a particular region can the student get the greatest benefit from the literature. He must not even then be allowed to use this outside the laboratory. He must have the maps and other laboratory material at his command while reading. Geographic reading without frequent reference to the maps is of very little value.

There is very little literature that can be placed in the hands of any but advanced students in physiography, because most of our literature on physiography is buried in technical papers on geology. There are, however, a small number of papers that may be profitably placed in the hands of students after the facts of the region discussed have been worked out from the laboratory material. Such papers as Grabau's or Gilbert's papers on "Niagara," Davis' papers on "The Outline of Cape Cod," "The Seine, the Meuse and the Moselle," "The Drainage of Cuestas," Buckman's paper on "The Development of the Severn," Mill's paper on "A Portion of Sussex," some of Fairchild's and Leverett's papers, the descriptive numbers of the

National Geographic Monographs, and a few others. All of the papers named are descriptive mainly, not theoretic.

The part taken by lectures in the undergraduate work in physiography should be made subordinate to laboratory work and recitations or quizzes on the laboratory work. Whatever the relation of lectures to the other work in other sciences may be, in physiography it should be as stated. For undergraduate students there is very little real discipline in listening to lectures however valuable they may be to other students. There is too much temptation to theoretical generalization on an insufficient basis. The average undergraduate is very much inclined to that sort of thing when he reaches the University. This is especially true with regard to Physical Geography. Very careful treatment of such a man is necessary if any work is got out of him.

The time of the teacher should be taken up in directing and assisting rather than in leading.

The study of the facts should be taken up from the areal rather than the subjective point of view, i. e.; the regional idea should be the controlling one. This does not mean that all parts of a region should be studied with equal detail. Special areas which illustrate certain physiographic features particularly well should receive the greatest amount of attention, and the rest of the area studied by the comparative method. The areal study is important in physiography because of the practical as well as the educational value of the subject. If training alone were all that could be obtained by physiographic study then the study of the subject through a few types would be permissible. The facts of physiography, however, are of such great value in other lines of educational and practical effort that this phase of the subject cannot be neglected. In a practical age and a country where the first question asked of any proposition is "What is there in it?" this phase of the subject will appeal to students where no other will.

The work should take up, for example, the physiography of the United States, studying the whole area with as much care as the nature of the case and the data obtainable will allow. Such a course of study will occupy the time of an ordinary six-hour course through one semester or one of three hours through two semesters of the University course.

This may be followed by a three-hour one-semester course on the Physiography of Europe and a course of lectures on the broad phases and world relations of earth form and the theory of physiographic development for another semester.

The student who does not intend to become a specialist in physiography

will probably go no further in the subject than this. He may, however, take a semester course in Meteorology or Climatology.

Such work is of especial value to the student who is specializing or is intending to specialize in either History, Economics, Civics or Sociology. The physical environment of man has had, and still has, so profound an influence on the progress and character of his development, that the latter cannot be adequately understood without a knowledge of the former.

If the student intends to specialize in the subject, he must at this point take up geological work if he has not already done so. Otherwise he will proceed with advanced work in which the method is largely dependent upon the individual. No set rules can be laid down for such work in a short paper.

The ideal course in Physiography, therefore, begins with the detailed study of a small area on the ground followed to that degree of detail in which the student will be able to map it accurately and also sketch the essential features from memory.

This to be followed by three semesters of detailed study of physiographic facts in the laboratory and one semester of lectures on physiographic principles. This may be followed by a year of work in Meteorology and material resources for the student who is specializing in humanitarian lines. The specialist in Economics will begin individual advanced work at the end of the second year.

SOME NEGLECTED MATTERS IN GEOGRAPHY TEACHING

As an instance of the kind I may just mention that I met scores of men both ways between England and Australia, who did not know why the southern circumpolar stars were not visible in the British Isles; why the constellations did not always appear in the same position in the heavens at, say, 8 o'clock every evening throughout the year, having always understood that they were composed of "fixed stars." It was equally incomprehensible to all, how a day should be gained in crossing the Anti-Prime Meridian on the voyage from Sydney to San Francisco, and more than one man wished to know if the moon appeared the same in England as in Australia.—*From J. P. Thomson's Round the World.*

EDITORIALS

ANNOUNCEMENT

WE regret to announce a slight change in the editorial management of the Journal of Geography, beginning with the current volume. This change is fortunately, however, more a change in form of statement than in fact, for Professor Lehnerts will continue actively to coöperate in the work of the Journal by his advice and contributions. As an associate editor he will be freed from the responsibility of caring for the constantly increasing details of management and will be free to devote his attention to special problems, in which he is particularly interested and for the solution of which his long and successful experience as an editor and teacher make him peculiarly fitted.

Although there is a change in the editing and in the place of publication of the Journal, there is to be no change in the form and character of the magazine. The Journal will continue to be devoted to the cause of better geography teaching in the elementary, secondary and normal schools, and will, as before, be a magazine for teachers of geography.

It is the desire of the Editor to have the Journal practical and helpful, to include articles on teaching and on phases of geography valuable to teachers. We shall continue the policy of including a certain class of strictly geographical articles of help to the teacher either directly in class-room work or for his general training. We desire to have all the material included good geographically as well as valuable educationally. We have no desire to publish a scientific journal for the geographer, for the field of scientific geography is already well covered in this country.

We believe that there is a demand for a journal that will make scientific geography available for teachers and that will help teachers make their geography teaching better and capable of being judged favorably as good geography teaching as well as good teaching. It is to this field of endeavor that the Journal of Geography will be devoted in the future as in the past.

PRESENT STATUS OF GEOGRAPHY TEACHING

The last twelve years have seen great advances in this country in all phases of geography teaching, but especially in the elementary, secondary and normal schools. The teachers are better trained and more appreciative of the need of more knowledge of geography, the courses of study in elementary

schools are more logical and helpful, the work in the secondary schools is more scientific and less mere information concerning a few unrelated facts, normal school departments of geography no longer, as a rule, believe that they can teach the teaching of geography to pupils who have no more knowledge of geography than they gained in the elementary school, laboratory work has come to stay in all phases of geography teaching, the text-books are better, more accurate, more teachable and less encyclopedic, the reference volumes, good geographically and pedagogically, are almost a legion, summer school and university extension courses in geography are well patronized, and in every way the opportunities for better work are more possible than ever before.

There is still a great room for improvement, for the vast host of suggestions from geographers and teachers are still more or less of a chaos. The leaders are not agreed as to what fundamentals they are working for, and hence indecision on the part of teachers as what is best for their classes.

We need to get together and not to continue to scatter our efforts, not with a view to making courses of study so stereotyped that teachers are merely machines working patiently and mechanically at the grinding out of lessons, but that we may know what good geography teaching is and measure our advance in accordance with these ideals and help one another in the reaching of these ideals. It is for this purpose that the Journal of Geography primarily exists and contributions, however brief, are welcomed from all who can help the cause by giving to others that which they have found valuable by experience.

HOME GEOGRAPHY

It is with particular pleasure that we reprint by request in this number, Professor Davis's valuable and suggestive article on home geography, printed in the first number of the Journal of School Geography in 1897 and reprinted elsewhere several times. The article is just as pertinent to the cause now as when first printed, and teachers will find it helpful in showing how to bind together some of the facts of home geography, which are often presented in such an isolated way that the results gained are of little value. Home geography is still unorganized in many schools and contributions to the better arrangement of the subject are much to the point.

THE ARCHAIC IN GEOGRAPHY TEACHING

Courses of study in geography and school text-books still contain a vast number of facts of little or no value except to the expert advanced student. This largely results from the fact that the earlier geographies were mostly

compends of great encyclopedias, which included all that was known about all phases of geography.

By a process of gradual elimination many of the facts too difficult for school purposes or of no value for beginners have been omitted, but conservatism has kept many facts in our texts just because parents and adults cannot approve a course that does not include all that they had in their school work a generation ago.

An experience of a number of years has shown the writer that teachers in summer schools and extension courses always want two matters explained "because we have to teach them." These are the condition of the interior of the earth and the causes for continent and mountain building—both of which are not necessary in school work and too difficult or little understood to be given even to somewhat advanced pupils. There is no pedagogical or geographical reason why such topics should be included in our school work and every reason why they should not be. When the experts in a field grant that their knowledge is incomplete and must remain so, teachers should not teach a part of what is known as the whole truth and give the impression that the problem is solved.

To teach that continents and mountains do grow, that the interior of the earth is hot and how we know it, is proper and necessary, but to teach this or that theory in reference to vulcanism or mountain building as the whole truth, is wrong because some day some of the pupils will find the so-called truth error and will lose faith in their teacher and the subject.

Teachers should be proud to acknowledge their ignorance on certain topics in geography, concerning which the best experts are only partially informed. The ignorance of proved facts and principles of long standing is to be deplored, but a teacher need fear no stigma of ignorance when she acknowledges that she does not know the answer to problems of the type mentioned, for such "ignorance" is really knowledge.

THE VALUE OF GEOGRAPHY

"Even to know where the places one reads of are, what is their climate, and how they are peopled is something; but, taking the wider view of geography as the science which aims at explaining the adjustment of people to land, there is scarcely a problem of past history or of present politics and economics in any country which cannot be elucidated by the application of its principles."—*H. R. Mill, International Geography.*

REVIEWS

GEOGRAPHICAL INTERPRETATIONS OF AMERICAN HISTORY[1]

THE contemporaneous appearance of two works devoted to the discussion of the physiographic basis of American development is significant both of an enlarging view of the science of geography in this country and of the changing attitude of historical students toward their own subject. Significant, too, is the fact that both books are by students primarily interested in geography rather than in history. Miss Semple is a student of Ratzel, whose recent death is lamented by American scholars. He was a forerunner in the path that American historians must follow who view their problems as those arising from the study of the evolution of society in the American environment. Professor Brigham occupies the chair of geology in Colgate University, and approaches his work with a better training in geology than in history.

Miss Semple views her subject principally with reference to its bearings upon the westward movement, although with attention to other topics. In outline, the book is arranged as follows: A discussion of the Atlantic States of Europe leads the way to a consideration of the discovery and early exploration of America. In successive chapters, she points out the influence of rivers upon exploration and settlement; the influence of the Appalachian barrier upon colonial history; the westward movement in relation to the physiographic features of this mountain system; the geographical environment of the early trans-Allegheny settlements; and the Louisiana purchase. Pausing at this point, to trace the geography of the Atlantic coast in relation to the development of American sea power, she discusses the geography of the naval and military operations in the War of 1812. The spread of population in the Mississippi Valley is next considered with reference to geographic conditions; and this is followed by a treatment of the physiographic forces which controlled the expansion into the Far West by southern and by northern trails. Having thus given a geographical interpretation to the movement of exploration and settlement, the author emphasizes the geographic forces which determined the growth of the United States to a continental power. The chapter on the inland waterways affords opportunity for her to point out the controlling influence of physiography upon the in-

[1] American History and its Geographic Conditions. By Ellen Churchill Semple. Boston and New York. Houghton, Mifflin and Co. 1903.
Geographic Influences in American History. By Albert Perry Brigham. Boston. Ginn and Co. 1903.

land commerce and internal improvements in the United States. Again recurring to the effect of geography upon War, Miss Semple gives an interpretation of the strategy of the Civil War from this viewpoint. Three-fourths of the book are given to the preceding topics. In the remaining pages are successive essays upon the geographical distribution of immigration; of cities and industries; and of railroads. Under the heading of the United States in relation to the American Mediterranean, she deals with our connection with the West Indies, and she closes with a brief characterization of the United States as a Pacific Ocean power.

Miss Semple's work so abounds in geographical interpretations, both of the large and the particular relations between history and geography, that a detailed review is impossible. The work exhibits both a grasp of the larger lines of American growth in reference to geographical conditions, and considerable familiarity with details. Evidently deeply influenced by Ratzel, she draws upon his physiographic doctrines, illustrating and reinforcing them by American data, and finding in European and Asiatic movements striking elements for comparisons. She has made it perfectly clear that conventional American historians have neglected a rich and essential field for interpreting the course of American development. At the same time she has furnished the general reader with a fascinating, and, to most of them a new, view of our history.

The work brings out the part played by mountain barriers, passes, and valleys, rivers, lakes and prairies, soils, temperature, rain-fall and similar conditions upon American history. The maps of the census showing distribution of population from decade to decade are interpreted in terms of geography; and the frontiers—physical, ethnographic and political—are considered with reference to physical factors.

Only occasionally does the author give indications that her training is less thorough in history than in geography. In illustration are such slips as crediting the treaty with Spain in 1795 to Jay instead of to Pinckney. The unprejudiced historian would hardly subscribe to the positive statement that California's "southern portion fell within slave territory according to the Missouri Compromise." It is a mistake to leave the impression that Iowa's early population was of northern origin, and Miss Semple gives too early a date in saying that "the movement of population, at least after 1820, was in general from free State to free and from slave State to slave."

Some of the topics afford opportunity for a more effective justification of the main thesis of geographical influence, than Miss Semple gives us. In discussing the Louisiana Purchase, for example, Miss Semple appears to be unaware of the programme of France to include within that province the

area between the Alleghenies and the Mississippi. No fuller recognition of the proposition that a river constitutes a poor barrier could be found than in the efforts of France and Spain to push American political authority back to these mountains. The memoirs and military plans submitted to France on this subject from 1787 to 1800 afford abundant recognition of this fact. In the history of the Spanish posts on the Mississippi the author might also have found additional evidence for the proof of the importance of the controlling heights on the east bank of the river, an importance which she brings out in her chapter on the Civil War. The same posts which North and South contended for on this river were the ones that Spain and the United States quarrelled over at the beginning of the Republic.

The physiographic forces are well brought out in general, but a more adequate treatment of the relation of forests to settlement would be acceptable and the influence of the prairie areas is not clearly presented. The Far West, aside from the Pacific Coast, is hardly used as a means of enforcing geographic influences, after the period of the fur trader and the early trail-makers, although the region is rich in material for physiographic interpretation.

In general, Miss Semple, possibly from her Kentucky residence, has laid greater stress upon the geographic influences as shown in exploration, early settlement and war, than in those more enduring factors of natural resources, and conditions that are determining the social development of the American people of the present and of the future.

Professor Brigham treats his subject from the point of view of physiographic provinces, and like a true New Yorker, starts with the Eastern Gateway of the United States, by which he means the Hudson-Mohawk line to the Great Lakes. In successive chapters New England, the Appalachians, the Great Lakes, the prairies and the South are described, and then comes an interlude in the shape of a geographical interpretation of the Civil War. It may be remarked, in passing, that a comparison of the treatment of this subject by the two authors shows interestingly how, with agreement in essentials, two geographers can handle the same theme quite differently, each with merits of his own. The arid region, the Rocky Mountain belt, and the Pacific Coast are next dealt with, and the author closes with a discussion of American destiny from the view-point of geography, and an addendum in a description of the study of American geographical conditions by various departments of the Federal government.

From this brief indication of the scope of his book, it is clear that Professor Brigham's treatment admirably supplements and checks the work of Miss Semple. The author writes primarily as a geologist dealing with the

elementary facts of the geological history of each of the great provinces, and proceeding to illustrate by facts of history and existing social and economic conditions, the geographical influence of each province upon its people. He does not limit himself to descriptive and historical illustrations, but adds predictions of the lines of future growth under the influence of physical conditions. The book is well written, and is certain to be useful in laying the geographical foundation for history in the schools where it may be used. But, on the whole, the geography, geology and exposition of contemporaneous economic conditions, leave the historical data rather in the background.

In both of these books we have admirable features. They do not make the mistake of trying to state a law of historical development in terms of physical conditions; they are not attempts to rival Buckle. This is altogether praiseworthy; but at the same time, it must be added that they leave room for a more fundamental discussion of the importance of physical conditions in American development. They are in the nature of introductory and popular treatises upon a subject that must at some time be handled more deeply. The United States is a collection of physiographic provinces comparable in areas, and in resources, to countries, and even to empires, of Europe. Across these potential nations, if the term may be used, the stream of American settlement flowed. Each great province received these tides of population, adjusted them in successive eras to successive revelations of the resources and physiographic influences of the province. Each bred its own society, produced its leaders, and interacted upon its neighbors. When the American historian shall unfold the combined influences of geography acting upon western expansion and shaping society to the resources of these vast provinces, and of the ethnographic and social groupings, in explaining American development we shall come nearer to an understanding of the meaning of the nation's history. In the meantime we may be thankful for two such contributions as these of Miss Semple and Professor Brigham.

FREDERICK J. TURNER.

RECENT PUBLICATIONS

STUDENTS LABORATORY MANUAL OF PHYSICAL GEOGRAPHY. By Albert Perry Brigham, pp. xi + 153. New York, D. Appleton and Co., 1905.

A laboratory manual to accompany the text-book written by the author in association with Mr. G. K. Gilbert. Gives detailed questions for laboratory work, suggestive in many ways. To be reviewed later.

THE WESTERN UNITED STATES. By Harold W. Fairbanks, pp. vi + 302. Boston, D. C. Heath and Co., 1904.

A well written, well arranged, and well illustrated volume for supplementary work in reference to the Western United States. Authoritative. Unfortunately contains no index, and hence loses much of its value as a reference book for topical work.

THE FROZEN NORTH, AN ACCOUNT OF ARCTIC EXPLORATION FOR USE IN SCHOOLS. By Edith Horton, pp. iv + 157. Boston, D. C. Heath and Co., 1904.

An interesting and well chosen summary of the work in the Arctic regions from 1818 to 1902. Illustrations are in many cases crude and not up to the standard of the text.

ROUND THE WORLD. By J. P. Thompson, pp. xxvii + 358. Brisbane, Australia, 1904.

An account of a world encircling trip by a most eminent geographer. Much interesting personal narrative and some kindly criticism. An appendix contains an inclusive summary of the geology and geography of Australia.

HISTORIC HIGHWAYS, Vols. 12, 13, 14. By Archer B. Hulbert. The Arthur H. Clark Company, Cleveland, Ohio, 1904.

Vol. 12 is the second of the volumes devoted to Pioneer Roads. Especial attention given to the Old Northwestern Turnpike and Braddock's Road.

Vols. 13 and 14 discuss the great American canals, the latter volume being devoted entirely to the Erie Canal.

These volumes are more pertinent to the needs of the historian than to the geographer, though they do make available many interesting and valuable facts not easily secured elsewhere.

NOTES

THE USE OF THE CONSULAR REPORTS.—Very few of our teachers know of, and use, the Consular reports. They are excellent help in the study or teaching of geography and may be had for the asking.

Consuls date back to the middle ages, when they were appointed by commercial cities like Venice and Genoa. Their rights were as follows:

1. All merchandise exported by them was free from taxes and duties.
2. They were given quarters in certain maritime cities.
3. They were granted the privilege to have decided according to their own laws and by judges from their own nation all the controversies arising between persons carrying on trade under their protection.

The duties of the Consuls to-day depend upon treaty, usage and statute. In general they relate to the care of their countrymen's property, especially in case of death or shipwreck; certification of births, marriages or deaths; arbitration (voluntary) of disputes, as between master and crew; the relief of destitute seamen; the control of their country's shipping; an examination of their country's trade, with suggestions for its increase; in fine, a general care over the rights and interests of their countrymen, so far as they lie within their districts, to secure their just treatment by the foreign government.

The Consular system is under the Department of Commerce and Labor. The Consuls are appointed by the President and confirmed by the Senate. We have nearly a thousand Consuls in other countries and have between five and six hundred foreign Consuls in this country.

Daily Consular reports (excepting Sundays and holidays) are printed by the government. They touch upon a great variety of topics. One Consul reports an appropriation of about two and a half million dollars for a drainage system in South Africa and suggests that an effort be made to sell United States goods, because they are superior to the English goods.

Another Consul reports the commercial conditions of the country in which he is located. He says the Viceroy of Two Kwango issued a proclamation inviting merchants to come together to discuss the following topics:

1. Chamber of commerce.
2. Inspectors of commerce.
3. Exhibitions of articles.
4. Reports on market conditions.

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5. Commercial training schools.
6. Consulting with foreign merchants.

Often the Consuls are asked to investigate some special topic and reports are made upon that. In 1903 three of the December reports were devoted to macaroni wheat and flour. Our government had become very much interested in foreign markets for this wheat when it was found that some of our Western land was particularly well adapted to that kind of wheat.

The report for December 15, 1903, had brief reports on the following topics:

1. American Trade and Capital in Newfoundland.
2. British Naval Station at Esquimault.
3. Heating and Cooking Stoves in Mexico.
4. Efforts to Promote Trade in China.
5. Trade of Moscow in 1903.
6. New Sugar Bonus in Hungary.
7. Immigration to Manitoba from the United States.
8. Beet Sugar Factory in Turkestan.
9. Coal and Pig-Iron Output in Germany.
10. Wheat Crop in France.

Any teacher can secure these daily reports by writing to the Department of Commerce and Labor, Washington, D. C.—*Mara L. Ferguson, North Springfield, Pa.*

A Summer Shower in Arizona.—Just why it should rain so much more in July and August than during the remainder of the year seems as yet to be explained. Whether the trade winds wander thus far northward, whether the westerlies ascend the Colorado Valley from the Gulf of California, or whether the same moisture that evaporates here falls back again, is not yet determined.

It was a sultry day for Arizona, near the end of August, with the mercury up above the 100° mark. The mountains around about Tucson were crowned with masses of clouds, especially heavy and threatening over the hills fifteen miles east of the place where a thunder shower was in progress. The wind was blowing from the West and it seemed a perfectly safe undertaking to walk the distance of a mile that separates the University from the town. It was evident that the storm was of unusual violence, for through the clear atmosphere the roll of the thunder could be distinctly heard. The town had been nearly reached when I noticed the wind-mills on the east

side of the street were facing the East, while on the other side they were turned toward the West.

A lumber yard was within a block of me and I hastened toward the office. The wind was growing in violence every second, and ere the shelter was reached, big drops of rain were falling. The office faced the South. By the time I reached the shelter both hail and rain were beating against the door despite the protecting porch. The flood was coming down faster than the ice could melt or the water run away. The wind blew with such fury that it was more than one man could do to hold the door shut. Within ten minutes the wind had shifted toward the West, so that the door could be opened without admitting the deluge, and, within ten minutes more, the rain had ceased. The wind had completely boxed the compass and was again blowing a gentle breeze from the West. About an inch of rain seemed to have fallen near the store.

I left the store before the last drops had fallen, and it was well that I did so. From the gently sloping country east of the town, came muddy streams half the width of the street and from four to six inches in depth. Muddy, rushing rivulets that blocked the streets for half an hour. Within another hour nearly all evidence of a recent shower had vanished.

The only damage this storm did was to break an irrigation dam and to flood the streets.

A flood from a similar storm caught a Customs officer and his guide a few days later, while they were crossing a narrow valley in the mountains near by. They noted the approaching flood and drove with all speed toward an island-like hillock capped with a clump of trees. They barely had time to tie the horses and to fasten the wagon to these trees before the flood had climbed the hillock. The water rose until it partially filled the wagon-box. All night long the stream rushed by them, but by daybreak the flood had passed and the travelers were enabled to proceed on their way. —*Glenn A. Wilcox, University of Arizona, Tucson, Ariz.*

AN EXERCISE ON WEATHER MAPS.—The weather of Arizona is practically the same from day to day through the greater part of the year. Bright sunny days, with cool mornings, that range from about 45°-50° F. at sunrise to 80°-85° F. at noon-time. The cyclonic storms pass regularly but the centers are usually far to the North and the only changes here are slight variations in the directions of the winds together with a few clouds of the lighter orders when a low pressure area prevails.

The ordinary weather maps are not common here, but the Government has sent bundles of old maps from time to time.

The object of the exercise was to impress more firmly upon the class the changeableness of the weather throughout the United States, as well as to review the facts gleaned from the text-book. The maps on hand were those of December, January and May. These were arranged in booklets of three maps each, representing consecutive days. It would be easier to correct the papers if enough maps representing the weather for the same three days to supply the class could be obtained.

The outline we followed ran thus:

a. In your note-books write the dates on your sheets.

I. *b.* 1. Locate by States the *"Lows"* on the first map.

2. Note the pressure and temperatures near the centers of low pressure.

3. Note the direction of the wind all around the word *"Low"* at a distance of one hundred miles from the center. Does the wind blow in a similar manner around all the low areas? Can the general direction be classed as clockwise or counter-clockwise?

4. Is it raining, or snowing, in the neighborhood of the *"Lows"*? If so, in which direction from them?

5. In general, is the weather around the *"Lows"* clear or cloudy? Is it the same in all directions from the *"Low?"*

c. Make observations similar to those under *b* for areas of *"High"* pressure.

d. Find the difference between the *"High"* and *"Low"* pressure in inches of mercury. Also find how the temperatures compare.

e. Compare the size of the *"High"* and *"Low"* areas.

f. Which way from a *"Low"* can you generally find a *"High?"*

II. *g.* (*a*) If a storm path is marked on your map note its changes of position from day to day.

1. Which way does it travel?

2. How many miles each day?

(*b*) If no storm path is marked, trace the changes in position of the *"Highs"* and *"Lows"* from the first map across the other two. Do they follow any general direction? How far do they travel in 24 hours? (A rule can be made from a slip of paper marked as is the printed scale.)

h. Over how many States does the largest rain or snow storm extend on the first map? Does it increase or diminish during the next two days?

i. Fill out blanks similar to the following for (*a*) Phoenix, Arizona; (*b*) Portland, Oregon; (*c*) Boston, Mass.; (*d*) Duluth, Minn.; (*e*) New Orleans, La.; (*f*) Columbus, O.:

Day	The direction of the wind	Barometric pressure	Temperature	Weather, fair, cloudy, rainy, &c.
1st				
2nd				
3rd				

j. From the data found under [*g.* (*b*)] and under [*i.*] predict what the weather shall be at each of the places mentioned under [*i.*].

NOTE:—If practicable, the fourth map might be supplied and the pupils allowed to compare their predictions with the weather that did take place.—*Glenn A. Wilcox, University of Arizona, Tucson, Ariz.*

OUT OF DOOR WORK IN GEOGRAPHY.—Books came into such honor at the Renaissance that they excluded observation from education for centuries. The sciences now have learned to use books as invaluable records, but education still gives them too early an emphasis.

School books teach that the earth is an oblate spheroid, a view founded on studies made in 1870 of only three points of the earth's surface. We know as a matter of fact now that it is simply and accurately a ball, without strictly geometrical form. We should teach that it does not seem to be a ball because we see so little of it at once and illustrate concretely. Illustrations like the hulling down of a ship at the horizon are admirable to try, but worthless to merely tell about.

Elementary work in science, and geography is science, consists in getting children to notice things that we want them to reason about later. More showing and illustrating is in order in early years and less book. Ideally the book account is taken with real illustration. Explanations belong mostly to the high school age. That is why we put geometry there.

The laboratory method aims to arouse mental activity with regard to things and much of this activity should be turned on the world about us. Imagine music taught without any sounds! But that is how physics and chemistry used to be taught and so geography is taught to-day. Don't define a river. Your definition is of little value except for the purpose of debate.

Go out and see a river; go out and see deltas and flood plains. The outdoor world is full of life and change in its geographic as well as in its biologic aspects, and the geographic aspects are more available for teaching

children. That they are not believed in at present is because teachers do not go out of doors to see them. Maps should be symbolic of the real world, so we must point out the reality and teach the manner of symbolizing it.

The exposition shows the opportunities for better use of this symbolism than is made. If the sixty minutes a week that the Committee of Fifteen suggest for oral work in lower grade geography be given to out-door work under teachers who can make a map and read a map, geography will make much progress.—*School Journal,* July, 1904.

USE MADE OF LOCAL LAND FEATURES.—From our room windows a large hill fifty feet away is easily studied. "Mt. A." is its local name—all the children know it. Before dismissal at noon it takes but a few moments to know that it is so easily noticed because so much higher than the rest of the land around. A desire to know of what it is made is easily aroused.

In the afternoon many children bring in papers or boxes of soil obtained therefrom. These, all examine to note some little loam and grass-roots found at the surface, with the mass of material, gravel, sand and stones. So the hill is just a "lot" or mass of earth and stone higher than the rest of the land around.

Then we go to the windows to hold pencils against the hill from the top to the left bottom; they slant. From top to right bottom. They slant more. Here are two slopes. One is easy to walk up, a long coast in winter, with better yards for the houses upon the hill; it is gentle or gradual. The other slope is hard to climb, water runs down fast, stones roll frequently; it is steep or abrupt. The pencils are tried in all possible places. There is no place where there is no slope. We infer that the other side must be very like. Children living there, very familiar with it, confirm our inference, and before the next day most have verified it. The hill slopes everywhere from summit to base, but not uniformly.

Again we go to the windows. This time to hold string to outline the hill as an aid in modeling in sand and drawing on board and paper. Next the base-line is traced and the summit located upon the base—in sand and drawing. A few bright dark lines are drawn to show abrupt slopes; a few long light ones for the gradual slopes. Then follows a drill in reading plans and side drawings—by voice, sand or pencil. This is followed by brief work or reference to other local hills, summer vacation knowledge, pictures and so on.

The transition to mountains is accomplished by a trip upstairs. Looking from the windows there a low range of old mountains is clearly seen, and drawn. Many children have been there and know the range is made of

rock. It appears just as an upfolding of the general surface. One big round has its own name—which calls attention to the separate rounds or peaks or mountains.

The children appreciate the beauty the range creates in the landscape, and know how cool it is upon the tops—so the formal work easily follows.—*G. A. W.*

Geography Teaching in India.—Let us examine the system of teaching of geography in the generality of our schools. Here and there, there are honorable exceptions and we leave such schools out of consideration for the present. The Indian school-masters are generally slaves of text-books, and on these text-books a lesson is set on the previous day. The pupil while at home spends a hard hour in getting by heart the long lists of names of a country's boundaries, its physical features, productions, exports and imports, and lastly, towns and forms of government. It affords innocent amusement and at the same time rouses the pity of a passer-by in the road to hear one of our school-boys read his geography lesson aloud at nights. He conquers his aversion and sits to study with dogged will, devoting an hour of patient work to the subject. A few days ago I had an opportunity of hearing a boy read the exports and imports of England. He began by reciting the words, "The principal exports are" seven or eight times, and then "cotton and woollen" another seven or eight times, then "goods and metals" seven or eight times again, and at last, came the full sentence to be recited "The principal exports are cotton and woollen goods, metals." Then each of the words "machinery, cutlery, coal, linen manufactures, etc.," were recited six, seven, ten and at times fifteen times also. Such is the sort of home preparation our pupils make. With these long lists of names stuffed in their brains they come to the class.

At the appointed time, the geography lesson begins; the monitor brings the map before the teacher enters and hangs it on the black-board, for there is no other provision made for hanging the map. Then enters the teacher and asks his boys the lesson set for the day. On the boys supplying him with the information, he gently takes the text-book out from the class desk, if the monitor has not previously done it, and spreads it before him on the table. Now follow a series of questions from the teacher, and invariably the answers to these questions are long lists of names. The recitation of these long lists over, the map pointing begins. This over, a new lesson is set for the next day. Occasionally a question or two is asked in physical geography. Even here no attempt is made to correlate the facts. The teacher dictates notes from his note-book and the boys take it down. The

lesson for the day is over. No explanations are offered to make the subject attractive and intelligible. The teacher is a machine acting mechanically within the boundaries of his class-book. His one aim is to stuff the young minds with painfully heavy particulars. Why then wonder if the poor student pressed under this heavy weight drops down even before the appointed time? What ought to be the most engrossing and fascinating of all the subjects of school curriculum is generally the subject hated both by the teachers and the taught.

The object of the geography teacher should not be to make his pupil a walking encyclopedia by making him commit to memory all sorts of names. What the geography teacher ought to strive at is the elimination of unnecessary, and the emphasizing of important features. His pupil need only know the names of the most important towns of the world. But he should possess a thorough knowledge of their position and the advantages they have on account of their position. The requirements of the towns and their products, their historical associations and present importance might be emphasized. The boys must be made to express in words what they observe on the map with regard to the places. The black-board should be used to illustrate the lesson, for the map may not show the exact character, say of a harbor like that of Bombay or Port Jackson. The lesson might be enlivened and the imagination of the pupils awakened by giving them an idea of the influence of geographical position on the history and civilization of the people of the country or the town. Photographs, pictures and accounts of travel in those countries, or descriptions of towns as given by globe-trotters will doubtless give vivid and correct ideas of the country that is being studied, and will increase the boys' interest in the lesson. Above all the memory must be exercised very sparingly. I would rather our boys should know all about a few towns thoroughly than that they should give us big catalogues of names of obscure and unimportant towns with which our geography books are full. There is no fear that our boys will miss the mark in the University examinations; for what is lost in quantity is gained in quality. To attain all these results, the teaching should be in the form of a real conversation. Most of our pupils fail in the Examination not so much because they do not know facts, but because they are not able to express in words what they do know. I should like our geography classes to be also English composition classes. For this purpose, conversational teaching is the best. The teacher by careful questioning can lead the class to reason for themselves according to a plan previously determined upon. The pupils may be allowed to breathe the stimulating atmosphere of liberty and allowed time to express his thoughts. It is only then that the teacher can

see what it is that attracts the class and what devices are most telling on the pupils. He has to look at the subject from many stand-points, and every difficulty that the pupils raise in the course of the lesson must be an additional enlightenment to him. Irrelevant questions may be raised by the class; a skillful teacher ought to be able to discover a link between the questions and the lesson. The teacher himself may have to digress a little at times, and such digressions may be very valuable, as happy suggestive ideas very often strike him when he is actually giving the lesson, ideas which did not occur in the course of his study or when preparing the notes of lessons. In the course of the conversation with his boys there is ample scope for making the teaching as realistic as possible. The one thing during the course of the conversation that the teacher has to bear in mind is to make the boys express their answers in simple and clear English. Note-giving also may be occasionally indulged in. On some occasions, the boys may be asked in the geography class to reproduce on paper what has been taught to them. In the matriculation class problems also may be set to see how far the pupils have been able to grasp the principles of the science. All this would mean considerable work to the teacher. It is only when he ungrudgingly gives his time to the work of the class, that he will not degenerate intellectually as years go by—he will not be dull, dogmatic and stereotyped. Though after a time he may lose the enthusiastic freshness of youth, yet by constant study and application to the subject, he will gain the freshness which arises from deeper knowledge, greater skill and wider sympathies.—*Indian Journal of Education,* May, 1904.

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